



**Santa S & W District FY12 Wastewater System Project**  
**SRF Loan #WW 1210**  
**\$565,306**

**Interim Green Project Reserve Justification**  
**Business Case GPR Documentation**

RENOVATION OF GRAVITY WASTEWATER COLLECTION SYSTEM EXPERIENCING EXCESSIVE I/I (Energy Efficiency). Business Case GPR per 3.5-4: *I/I correction projects that save energy from pumping, chemical usage and WWTP capacity and are cost effective (\$489,200).*

# RENOVATION OF GRAVITY WASTEWATER COLLECTION SYSTEM<sup>1</sup>

## Summary

- Renovation of the District's gravity wastewater collection system to reduce excessive inflow and infiltration (I/I).
- Estimated loan amount = \$565,306
- Estimated energy efficient (green) portion of loan = 87% (\$489,200)

## Background

- The gravity collection system build in 1965 consisting of concrete gravity pipe and grade block manholes has outlived its useful life. The system currently experiences peak flows 23 times its average daily flow due to excessive amounts of I/I. This I/I results in excessive runtimes at the lift stations, higher chemical usage and permit violations at the wastewater treatment plant (WWTP).
- Rainfall and high groundwater levels in the study area typically occur annually in the months of March to June and September to November.
- During these wet weather periods Santa lift stations pump up to 230,000 gpd resulting in 22 to 24 hour daily pump runtimes.
- The average daily flow during the dry weather months was measured at 10,000 gpd resulting in 1 to 2 hour daily pump runtimes. From field observations, exfiltration during this dry weather period was approximated at 4,000 gpd. Therefore, 14,000 gpd was used as a design daily average flow.

## Results<sup>1</sup>

- Removal and replacement of 5,200 LF of 8" concrete sewer main and 17 grade block manholes with 8" PVC pipe and precast concrete manholes. Cost = \$489,200
- Peak flow rates after new construction are anticipated to be up to 62,070 gpd as compared to current peak flows of 230,000 gpd.
- Lift station pumping costs will be reduced by correcting excessive I/I. Collection system upgrades will also reduce flow & increase treatment plant capacity.

## Conclusion

- Replacing the gravity mains and manholes with new facilities would result in a reduction of I/I by at least 73%.
- Reducing system I/I by 73% results in a corresponding reduction in wastewater system pumping costs; combined with a concurrent reduction in overall wastewater treatment costs, the proposed gravity wastewater line replacement project results in at least a 30% reduction in overall energy costs over existing costs.
- Reducing overall pumping costs by at least 30% is cost effective (>20% reduction over existing costs).
- **GPR Costs:** Replacing 5,200 feet of gravity sewer pipe and 17 manholes = \$489,200.
- **GPR Justification:** The prioritized replacement of gravity sewer lines by the City as recommended in the Capital Improvement Plan is GPR-eligible by a Business Case per Section 3.5-4<sup>2</sup> (Energy Efficient): *I/I correction projects that save energy from pumping, chemical usage and WWTP capacity and are cost effective.*

<sup>1</sup> Santa Collection System Preliminary Engineering Report, Mountain Waterworks, February 2013

<sup>2</sup> Attachment 2. April 21, 2010 EPA Guidance for Determining GPR Eligibility for FY11 SRF Projects, P.10